

DOCKET NO. 119464
Serial No. 10/019,161
Amendment in response to Office Action of Jan. 7, 2004

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

1. (Currently Amended) Process for producing an aqueous cationic dispersion of polymers useful as a sizing agent for paper, having hydrophobic characteristics comprising emulsion polymerizing at a temperature ranging from 30 to 100°C one or more monomers in the presence of 30 to 50% by weight, with respect to the one or more monomers, of a surfactant consisting of imidized styrene/maleic anhydride copolymer, the solids content of the dispersion being 20 to 50%, and in the absence of a conventional accessory surfactant.
2. (Previously presented) Process according to claim 1 wherein the weight ratio of styrene to maleic anhydride of the copolymer is about 1/1 to 6/1.
3. (Previously presented) Process according to claim 2 wherein the ratio is 2/1 to 4/1.
4. (Previously presented) Process according to claim 1 wherein the copolymer has a number average molecular weight of about 500 to 20,000.
5. (Previously presented) Process according to claim 4 wherein the number average molecular weight is 2000 to 5000.
6. (Previously presented) Process according to claim 1 wherein the copolymer has a degree of imidization of about 50 to 100%.
7. (Previously presented) Process according to claim 1 wherein the copolymer is imidized by dimethylpropylene diamine.
8. (Previously presented) Process according to claim 1 wherein the monomer(s) are one or more of either
 - (A) hydrophobic monomers selected from the group consisting of

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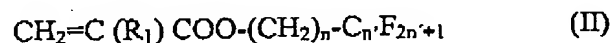
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(i) alkyl (meth)acrylates of the formula (I):

wherein $\text{R}_1 = \text{H}$ or CH_3 ; and R_2 is a group having 1 to 22 carbon atoms;

(ii) perfluoroalkyl (meth)acrylates of formula (II):

wherein $\text{R}_1 = \text{H}$ or CH_3 ; $n = 1-4$; and $n' = 1-14$;

(iii) vinyl acetate;

(iv) styrene; and

(v) versatic esters; and

(B) hydrophilic monomers.

9. (Previously presented) Process according to claim 8 wherein the monomer(s) comprise one or more hydrophobic monomers selected from the group consisting of methyl acrylate, ethyl acrylate, butyl acrylate, 2-ethylhexyl acrylate, and methyl methacrylate;

10. (Previously presented) Process according to claim 8 wherein the monomer(s) comprise one or more relatively hydrophilic monomers selected from the group consisting of acrylic acid, methacrylic acid, acrylamide, and ethylene glycol (meth)acrylate.

11. (Previously presented) Composition useful as a sizing agent for paper comprising an aqueous cationic dispersion prepared by process of claim 1.

12. (Previously presented) Composition of claim 11 wherein the dispersed emulsion polymer particles have a size of about 50 to 500 nm.

13. (Previously presented) Composition of claim 12 wherein the particle size is about 50 to 300 nm.

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14. (Previously presented) Composition of claim 11 wherein the dispensed emulsion polymer has a glass transition temperature of about -70°C to 100°C .

15. (Previously presented) Composition of claim 11 wherein the glass transition temperature is about 0 to 50°C .

16. (Previously Presented) Process of treating paper or boards comprising using a composition prepared by a process comprising comprising emulsion polymerizing at a temperature ranging from 30 to 100°C one or more monomers in the presence of 30 to 50% by weight, with respect to the one or more monomers, of a surfactant consisting of imidized styrene/maleic anhydride copolymer, the solids content of the dispersion being 20 to 50%, as a paper sizing agent.

17. (Previously presented) Process of claim 16 wherein no retention agent is used and immediate sizing is obtained.

18. (Previously presented) Process of claim 16 wherein one or more additional sizing agents are used as surface sizing agents.

19. (Previously presented) Process of claim 18 wherein the additional sizing agent(s) are selected from starches.

20. (Previously presented) Composition useful for external sizing or internal sizing of paper or board comprising (A) an aqueous cationic dispersion and (B) starch in a weight ratio of (A) cationic dispersion to (B) starch of about 5:95 to 50:50, the dispersion prepared by a process comprising emulsion polymerizing at a temperature ranging from 30 to 100°C one or more monomers in the presence of 30 to 50% by weight, with respect to the one or more monomers, of a surfactant consisting of imidized styrene/maleic anhydride copolymer, the solids content of the dispersion being 20 to 50%.